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ABSTRACT

Perspectives concerning "research about research" are summarized, based on symposia sponsored by the University of Goteborg in Sweden. It is noted that studies of science, technology, and society (STS) are prevalent in several countries during the 1970s. Based on visits to STS programs in the United States, it is suggested that there are different antecedent contexts and fields of activity for research about research. One end of the spectrum is represented by humanities (e.g., Stanford University's "Man, Technology and Human Values" program). At the opposite end of the spectrum are studies in engineering or at faculties of jurisprudence and medicine. In the middle of the same spectrum are a concentration of studies of the social aspects of science and technology, together with decision-making problems (e.g., arms control questions). In Sweden, the colloquia generated the idea of establishing a center of research about research, based on a number of emergent projects, which are briefly described. It is concluded that the colloquia helped to impart some stability to a new research field, both by facilitating the development of knowledge surveys and by establishing international research contacts. (SW)

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CONCLUDED PROJECT

TITLE OF
PROJECT

SCIENTIFIC DEVELOPMENT, RESEARCH ORGANISATION AND
RESEARCH CAREER

CONDUCTED AT

Department of Theory of Science
University of Göteborg
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BACKGROUND AND PURPOSE

In November 1976, a symposium on research about research was conducted at the Department of Theory of Science in Göteborg under the heading "Ten years research about research". This conference was attended by about 50 researchers and practitioners representing various disciplines and administrative sectors of the Swedish R & D system. The symposium marked the culmination of a series of colloquia jointly conducted for almost ten years by the Department of Theory of Science at the University of Göteborg and the Department of Industrial Economics and Management at the Royal Institute of Technology in Stockholm. One of the main purposes acquired by the symposium was that of looking back, and then looking ahead, in order to devise fruitful means of co-operation between researchers in several disciplines studying various aspects of the complex of sciences in society, as well as improving contacts

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between the potential users of this research. Another long-term aim was to try to establish a centre for research about research at the University of Göteborg, based on the Department of Theory of Science. The conference proceedings included a number of background sketches reviewing Swedish achievements and international development trends in this field. The symposium resulted in a draft scheme of continuous colloquia focusing on the theme referred to in the project heading. Activities of this kind were successfully launched in the autumn term 1977, and they were concluded in the autumn term 1983 with a final colloquium report and the manuscript of an anthology to be published next year.

The concluding anthology, like the preceeding symposium reports, has been edited by Jan Bärmark, who compares research about research to an elephant described by ten blind men. One of them felt the elephant's trunk and averred that the elephant was long and thin, very much like a snake. Another wrapped his arms around one of the elephant's legs and with equally firm conviction compared the shape of the elephant to that of a tree. The other eight also described different parts of the elephant, insisting that the true picture of the elephant was only to be derived from their personal experience.

The anthology *Describing an elephant. Essays in research about research* emanates from the fact that research about research is still quite inchoate, employing as it does a variety of perspectives and based as it is on a variety of disciplines, each of which focuses on *one* aspect - be it psychological, sociological, historical, political, economic or epistemological - while all the others are treated as incidental. One of the tasks of theory of science in this connection is still to try and merge, co-ordinate and transcend the individual research "reports" so as to convey a more integrated, coherent picture of cognitive development and science in society, based on a generalised theory. This too was one of the fundamental purposes of the series of colloquia.

Another aim of these colloquia has been to develop international contacts in the field, to promote research training in the subject, to improve the prospects of a research community around research about research, and - last but not least - to develop the critical function of the theory of science. The colloquia also developed into a forum for discussing the Swedish R & D system, its development during the 1970s and problems of higher education in this connection.

TEN YEARS RESEARCH ABOUT RESEARCH

The first background report (Elzinga 1976a) provides a general introduction to research about research. Development tendencies in Sweden and abroad are pointed out, and current activities (at that time) in a number of subjects are charted, together with society's need for research about research. Clearly there was a gap between society's needs and existing academic resources. The traditional growth points of research about research have existed above all in political science, the history of science, the theory of science, and to a lesser extent economics and sociology. More recently there has been a shift of emphasis in favour of the last mentioned discipline (for example in the form of social studies of science and technology, sometimes termed "Science and Technology Studies" (STS) or, quite simply, "Science Studies"). This report also drew attention to the existence of various ideological lines or "profiles" in these fields, e.g.:

General studies of science and technology as cultural phenomena (humanist conception).

Studies primarily concerned with ethical issues, social consequences and moral implications of scientific development (responsibilist conception).

Activities in which courses about science and society etc. are best described as an embellishment of technical education, technical progress otherwise being taken for granted (technocratic conception).

Studies within the framework of history of science and theory of science or research and education within these disciplines (academic conception).

Interdisciplinary approaches concentrating on the social relations of research and on its political, economic and administrative contexts (problem-oriented conception).

This enumeration of profiles, derived from a compendium published by the Science Policy Research Unit (SPRU) in England, is of course far from complete, but it does at least help us to identify certain dividing lines and ideological antitheses, e.g. between technocratic and romantic approaches.

The second background report for the symposium (Elzinga 1976b) summarises the situation in Sweden in 1976, indicates a number of potential growth points for research about research, together with strategies for developing this new field of research. It also presents a possible organisational model to be used in the event of a centre for research about research being established at the University of Göteborg. The report concludes with a plaidoyer for a theory of science which can serve as an integrating factor within research about research.

The symposium report (Bärmark 1978) confirms the fragmentation of research about research and underlines the need for an empirically oriented theory of science. The humanist perspective is regarded as a possible integrating factor, but at the same time it is said that the

success of such integration will hinge on the existence of ongoing thematic discussions of the paradigms of researchers about research and that this too is one of the important prerequisites of establishing a research community on research about research.

The symposium report includes introductory addresses in which several persons - Edmund Dahlström, Håkan Törnebohm, Aant Elzinga, Göran Friberg, Andrew Jamison, Bertil Nordbeck, Rikard Stankiewicz, Gösta Berglund, Margareta Bertilsson, Anders Karlqvist, Gösta Lagermalm and Lars Rey - propound various viewpoints and experiences shedding light on research about research, its feasibility, character and function in society. The symposium also revealed a host of indications of crisis rooted in economic difficulties, lack of continuity and firm organisation, and the tendency on the part of the established disciplines to monopolise important problems. These questions frequently re-occurred during the colloquia following the Göteborg symposium.

THE COLLOQUIA ETC.

Nine meetings in the colloquy series were conducted during the autumn term 1977 and the spring term 1978 under the heading "Scientific development, research organisation and research career" (Andersson & Berminge 1978). This gave us something of an overview, and two of the meetings were made to tie in with the reports of two current research policy investigations, with a view to critically appraising the same.

The colloquia in the autumn term 1978 and spring term 1979 were then made to focus on the development of international contacts, with special emphasis on social studies of science (Mussachia 1979). Our activities were enhanced by contributions from Australian,

British and American researchers (David Biggins, Maurice Kogan, John Ziman, Everett Mendelsohn), at the same time as greater prominence was also given to Swedish sociologists (Edmund Dahlström and Joachim Israel), and the project leader contributed a concluding "national report" presenting research about research in Sweden to an international audience (Elzinga 1980b), against the background of a characterisation of the state of Swedish research policy in the 1970s (Elzinga 1980a).

This phase of the activities ended in 1981 with a study trip to the USA, where visits were paid to about ten STS-like programmes. Various organisational and cognitive prerequisites for the development of research about research are discussed in the report on this trip, and it is observed that STS programmes in the USA had antecedents and contacts of three different kinds (Elzinga 1982a). The section which now follows is an excerpt from the abridged version of the same report (Elzinga 1982b).

TRAVEL REPORT FROM THE USA

Studies of science, technology and society abounded in several countries during the 1970s, partly in an attempt to refurbish the profile of science at a time when criticism and even anti-scientific currents of opinion have become increasingly widespread. Another reason could be seen in the need of social institutions to audit and analyse the consequences of comprehensive reform programmes in which science and technology have constituted central ingredients. However this may be, the USA today has about 80 Science, Technology and Society (STS) programmes at various universities and colleges, and more than 2,000 courses are reported at various levels. I visited some of these programmes in the spring of 1981, and the following are some of the impressions I gained.

One initial impression is that the STS programmes have now entered a period of critical self-appraisal. The generous donation funds and government grants which made it possible for them to be set up in the 1970s have now dwindled. Secondly, one has the impression that priorities are now being revised.

Generally speaking, there are three different antecedent contexts and fields of activity for this type of research about research. One end of the spectrum is represented by humanities, in which the history and philosophy of science have by tradition played an important part, although there are places where departments of comparative literature and suchlike disciplines have taken the initiative, for example through research or courses on such topics as scientific utopias in 19th century literature. It is perhaps fairer to refer to the importance of certain individuals rather than of university departments.

Starting points in the humanities can be seen, for example, in the Stanford University programme "Technology and Human Values", the St. Louis programme on "Man, Technology and Society", or the "Man, Environment and World" programme at Idaho University in Boise. Programmes of this kind, in which humanists and social scientists predominate, seem generally to adopt a more critical and speculative attitude towards science and technology than is the case with other programmes.

At the opposite end of the spectrum we find studies in engineering or at faculties of jurisprudence and medicine. In these cases, the focus is either theoretical and concerned with ethical problems of the technological society, or else it is more practical and related to legislation and controls in such controversial fields as nuclear power, biotechnology and computer science. Institutions with a religious slant often tend to focus on ethical issues and human

adjustment to new techniques. Scientific philosophers and historians taking part in these connections are sometimes persons who, owing to the scarcity of job opportunities, do not derive their livelihood from their original subjects. Once they have ventured into the analysis of consequences (technology assessment), they have difficulty in gaining acceptance within the traditional arts departments.

Discipline	Humanities	Political science and sociological studies	Faculties of technology, medicine and jurisprudence
Activity	Comparative literature, history of science, epistemology and philosophy	"STS" - studies of science-technology and public policy	Technology assessments R&D management
Focus	Emphasis on world picture and intra-disciplinary aspects	Emphasis on policy analysis and decision making	Analysis of consequences

In the middle of the same spectrum we find a concentration of studies of the social aspects of science and technology, together with decision-making problems. This includes research into armaments questions and arms control, pollution and other matters demanding public control. Political scientists and sociologists occupy a prominent position, although some philosophers are now entering the field, having turned their attention to decision-making problems and applying their specific analytical skills.

Many of the people I interviewed pointed to changes in the political and economic climate in the USA, claiming that STS programmes nowadays are regarded as something of a luxury. Programmes based on the humanities but lacking a permanent educational function are destined to disappear. Even privately financed universities like Cornell are experiencing this problem. Cornell once had one of the leading STS programmes, with abundant resources and several "stars". Owing, however, to a loosely knit organisation and difficulties in rooting the activities of the programme firmly in the university as a whole, the future seems bleak. It is said that moralising criticism of environmental ethics or biomedical technologies will also have less scope for manoeuvre in the 1980s. On the other hand, the outlook is bright for programmes which are firmly rooted in engineering studies and programmes raising policy questions in concrete terms. The same goes for programmes which have managed to establish a powerful teaching component in various Master and PhD studies within their universities.

Where fields of inquiry are concerned, it is believed that energy production research will become less prominent and environment protection will continue, while science and legislation will become a new and important research field (despite, and perhaps also because of, President Reagan's policy of decentralisation and de-regulation). Greater importance will also be attached to policy analysis concerning technologies of economic importance, biotechnology, nutrition, marine resources and suchlike. Some people are speaking in terms of a shift away from research policy in the 1960s to technology policy in the 1970s, followed now in the 1980s by an integration of both with economic policy or industrial policies.

Organisationally speaking, the most successful programmes have been built up round base resources within the framework of the university budget. Often this has also been a precondition of the development of qualified service-oriented research in the form of projects, insofar as these projects have been externally funded. One typical model is that of a core faculty with 50 % of the researchers' salaries coming out of the programme while the other half is put up by other departments and various projects. During the growth years, the most successful programmes were given a great deal of liberty in deploying their resources for the development of courses and internal faculty seminars and colloquies. Mostly this applied for a period of between two and five years. Academic legitimacy has thus been gained by seeking a home base way up in the university hierarchy while at the same time developing close links with such professional organisations as the AAAS, the PSA, the History of Science Association, the Society for Social Studies of Science (4-S), and with federal and state agencies. In some cases, centres of interdisciplinary studies have been organised under the direct authority of the Vice Chancellor. The problem of careers and promotion in interdisciplinary research fields can be tackled by crediting such activities in the assessment of eligibility for permanent appointments. Although there are many STS programmes and many kinds of profile, ranging from humanist-critical to instrumental and technocratic, only a few programmes have achieved real eminence. Typically enough, the contributing factors have been powerful financial support in the 1970s, large departments in the university environment with plenty of people to involve in these activities on a part-time basis, and then of course individual perseverance and skill in procuring project funds. At the same time there is a lack of

integration and contact between the various programmes, and the east and west coasts are completely separate worlds. One is also struck by the lack of knowledge concerning corresponding activities in Europe, which may be partly due to the language barrier and differences of cognitive tradition.

As regards the theory and philosophy of science in the USA, there is a traditional reluctance to collaborate with sociologists in 4-S and suchlike contexts. Then again, the Philosophy of Science Association is a powerful organisation in the USA. The PSA has now begun capturing interest in policy questions, partly through Patrick Suppes' initiative in setting up a committee which procures grants for research into medical ethics and decision-making theory in connection with new technologies. One common point of criticism is that the philosophers' contributions are often hard to integrate with the decision-making problems of practitioners; policy relevance is hard to find. The same is also said, for that matter, concerning more recent sociology of science, focusing on the interaction of social and cognitive factors in the growth of science, a field which is otherwise strongly represented both in West Germany and in Great Britain. Ethnographic "laboratory studies" too are far removed from what the decision-makers consider policy-relevant.

Dorothy Nelkin's studies of controversies concerning technological fields (nuclear power, recombinant DNA etc.), on the other hand, have not been without their importance in the debate on technology and science. There is also a growing interest today in case studies in the history of technology, e.g. the development of the computer industry, Silicon Valley and its history in California, to mention one typical example. Philosophers and epistemologists have a contribution

to make in these connections, especially if they adopt an historical approach.

(A more exhaustive travel report is obtainable from the Department of Theory of Science, University of Göteborg, Västra Hamngatan 3, S-411 17 Göteborg, Sweden.)

THE IDEA OF PROJECTS AS CATALYSTS IN THE FORMATION OF A CENTRE

The colloquia generated the idea of establishing a centre of research about research, based on a number of emergent projects. "Centre formation" as a type of organisation was made the subject of a prolonged survey conducted on behalf of the NBUC by Eiríkur Baldursson at the Department of Epistemology. Baldursson's report was prompted by the NBUC's interest in experimentation concerning the profiling of research and educational activities at various centres of higher learning, as well as elucidation of the special problem connected with discipline-transcending activities (Baldursson 1981).

The project "Ideologies of education and research" (Bärmark/Elzinga/Wallén), which was started within the Research on Higher Education Programme, in 1979, at the Department of Theory of Science, was one of several projects intended to constitute the embryo of a future centre of research about research. The purpose of this project was to elucidate a number of problems surrounding the interaction between cognitive production, ideology and social development, with particular reference to the care sector and research links for the "new" courses of study in this sector of the "new" higher education system. There were two parallel projects, one at the Department of the History of Science and Ideas and one at the Department of Sociology, both in the University

of Göteborg. The idea was to try and build up a more permanent organisation for research about research in Göteborg, round these projects (cf. Bärmark/Elzinga/Wallén 1980, especially the appendix in which the three projects are presented under the heading "Education, research organisation and scientific development"). Apart from the practical importance of the projects, the description of the "project outline" points to the fruitfulness of attempting to combine the approaches of cognitive sociology, history of ideas and theory of science in a study of this kind. "We hope that the projects will lead to a continuous exchange of ideas with international research groups and that they will gradually come to contribute towards an ongoing international debate on theory. From the very outset we have therefore tried to view or relate our problem field to current theories and models concerning research into the sociology of knowledge, the theory of science and the history of ideas" (op. cit., pp. 43-44). Emphasis is then placed on the way in which "the projects will make it possible for collective competences to be developed within the interdisciplinary research group and also in the departments concerned. We believe this development to be in line with the practical ideals of the new system of higher education" (ibid.).

The projects developed and came to lead a life of their own, but nothing came of the "centre formation" idea, due partly to persistent disciplinary fragmentation and also to the Department of Theory of Science being too small an organisational base (i.e. too small to achieve the "critical mass" referred to in American STS programmes), though the most important reasons were connected with the problems of the existing higher education system (administrative inertia, financial difficulties) and the proclivity of the sectoral research organisation for extracting the knowledge it needs and then going its own way, without

any long-term assumption of responsibility for university resources and the intellectual environment.

In order to convert these practical problems into a problem for research, the colloquia were revived by applying for grants from both the NBUC and the Swedish Council for Planning and Co-ordination of Research. Two colloquy meetings under the heading "Higher education in a sectorised R&D system" were held in the autumn term 1982 and spring term 1983, at the Department of Theory of Science in Göteborg and the Department of Political Science in Stockholm respectively the Group for the Study of Higher Education and Research Policy housed at the latter. Attention now came to focus primarily on the interaction of the sectoral R&D system with the university and college system (cf. Elzinga 1979 & 1980c). The task from the theory of science viewpoint was now to introduce perspectives of epistemology and the sociology of knowledge into the discussion of sectoral research policy, with a possible view to establishing some kind of national outline project to study sectorisation from the inside and outside, i.e. to supplement Rune Premfors' study of the use of sectoral research (cf. Premfors 1983) and Katrin Fridjonsdottir's study of research culture and research community (Fridjonsdottir 1982 and 1983). These projects were discussed at the first colloquy meeting, while at the second meeting the topic of inquiry was broadened to include the role of policy analysts and, more generally, intellectuals vis à vis the State and politics (see Elzinga 1983 and 1982e). The attempt to develop a new project in this field foundered on the difficulty involved in recruiting additional theory of science specialists for the purpose. A project sketch was drawn up, however, together with Andrew Jamison, Lennart Svensson and Thomas Söderqvist, under the heading EPISTEM (epistemological, intellectual and professional strategies within R&D systems). No grant

was obtained for this project. Instead part of it was pursued as a type of spin-off in the form of a conference to be held in the spring term 1984 on the subject of "the new class", intellectuals and the State (Söderqvist & Svensson).

SOME REFLECTIONS

The colloquia have obviously functioned well as an instrument for imparting some stability to a new research field, both by facilitating the development of knowledge surveys and by establishing international research contacts. Nor has there been any shortage of ideas for projects, and it has been possible within the colloquia to rapidly follow up and review important changes and ideas occurring in the discussion of research policy in Sweden. Furthermore, the colloquy has proved a viable means of bringing about discussions of current projects and investigating the feasibility of new project ideas. On the other hand, despite a rotation of venues, these activities have not contributed appreciably towards the establishment of a more permanent research community independent of sectoral research councils (cf. my comments concerning the evaluation by Neave et al. of the programme of research into higher education, in Andersson, 1984). Nor has this strategy led to the establishment of a centre for research about research, although the need for such a centre was acknowledged in the NBUC budget requests a year or so ago and the idea was actually put forward in the Government's 1982 Research Policy Bill (e.g. Prop. 1981/82:106, p. 53).

Our account has dwelt on the organisational side of project activities, the reason being that we have interpreted the colloquia as part of a strategy for the development of new interdisciplinary research fields. But there is also a theoretical side to the insights we have achieved. Some of these insights have been put forward in an essay prepared for the

International Conference on Studies of Higher Education and Research Organization at Rosenön, Dalarö, 6th-10th June 1983 (Elzinga, 1984). That essay discusses the way in which the higher education R&D system is subjected to two kinds of pressure from society at large - relevance pressure and pressure to respond to the social auditing of the corporative State (cf. Elzinga 1983a). This pressure tends to undermine the relative autonomy and integrity of research (Elzinga 1980d), partly through the medium of "epistemic drift", i.e. a process whereby traditional intradisciplinary criteria for the assessment of research findings are replaced by or confused with external criteria concerned with social relevance. Similar observations have been recorded in other countries; in Germany, for example, reference is made to a kind of "finalisation" of science (Schäfer 1983). If the project which has now been concluded has succeeded in putting forward any central epistemological idea of importance to research, it is that incorporated by the finalisation thesis and the tendency towards epistemic drift (cf. Kogan & Henkel 1983, p. 20). The term "hybrid research communities", used to describe the social networks evolving around sectorally stimulated research fields, is also relevant in this context.

Finally, we can discern in research communities three main types of strategy which have been developed vis à vis the relevance pressure exerted by society, viz the service strategy (which implies a certain form of adjustment), the disciplinary strategy (which implies a certain immunity achieved by basing theory on a well-established discipline), and action research as a strategy (which implies advocacy, against established society, on behalf of underprivileged groups, based on their perspectives and on participation in their "movements"). This last mentioned strategy can also be described as research oriented towards the alternative movement.

The problem with both the service strategy and action research as a strategy is that they are very liable to lapse into a situation of "epistemic drift". The great problem confronting university-based research today is that of striking a balance between scientific usefulness and scientific liberty (integrity). One spontaneous tendency at present is for researchers to fall back on disciplinary strategy. Research about research is therefore needed in order to look for viable alternatives.

Aant Elzinga
5th December 1983

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